

Massachusetts Government Efforts on Nanotechnology and Other Emerging Contaminants

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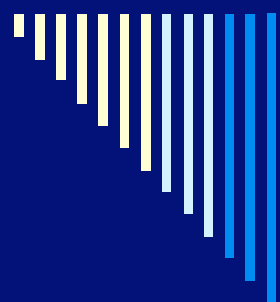
June 11, 2009 - Amherst, MA

**International Conference on the Environmental
Implications and Applications of Nanotechnology**



How did Massachusetts state govt get interested in Nanotechnology?

- MassDEP formed an internal Perchlorate Workgroup, culminating in first-in-the-nation drinking water and waste site cleanup standards for perchlorate in July 2006
- MassDEP then refocused Perchlorate Workgroup to an Emerging Contaminants Workgroup



Emerging Contaminants – Definition (1)

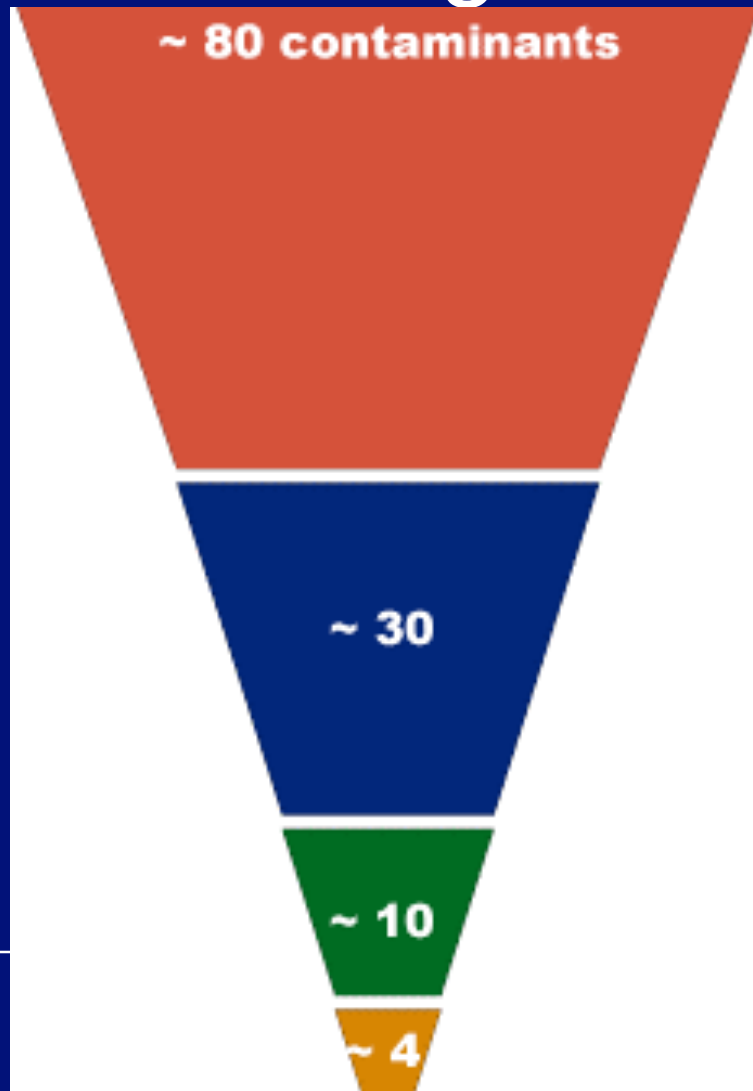
Hazardous materials or mixtures
(naturally occurring or manmade
chemical, microbial or radiological
substances) that have:



Emerging Contaminants – Definition (2)

- ❑ a perceived or real threat to human health, public safety or the environment;
- ❑ no published health standards or guidelines;
- ❑ insufficient or limited available toxicological information or toxicity information that is evolving or being re-evaluated; or,
- ❑ significant new source, pathway, or detection limit information.

Emerging Contaminant Screening Process



Preliminary List

Screen 1

Watch List

Screen 2

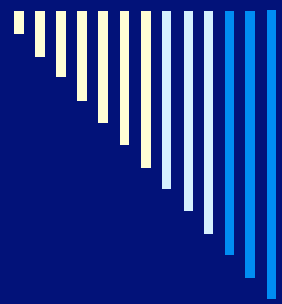
Priority Emerging Contaminants List

Short-term action ⁵



Emerging Contaminant Screening Process

- Preliminary List ~ 80 Contaminants, based on:
 - Database scans
 - Knowledge of workgroup & stakeholders on the presence of the environmental contaminant and exposure pathways
 - High urgency and visibility issue



Emerging Contaminant Screening Process

- Screening Process: Step 1
Contaminant is screened out when:
 - It is not considered to be generally important;
 - Others (EPA, states) are addressing the issue adequately;
 - An existing MassDEP standard or guideline exists;
 - Jurisdictional issues
- Result: Watch List ~ 30 Contaminants



Emerging Contaminant Screening Process

- Screening Process: Step 2

Consider:

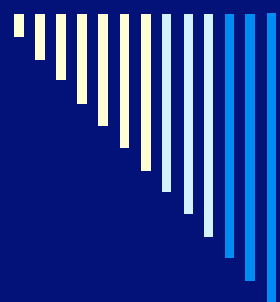
- Certainty in science
- Tangible outcomes
- Cross-media contaminant

- Result: ~ 10 Priority Emerging Contaminants



MassDEP Emerging Contaminant Priority List

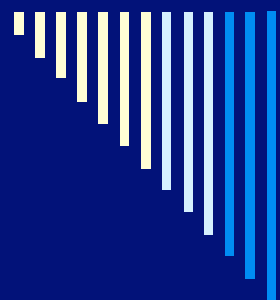
- Pharmaceuticals and personal care products (PPCPs) and Endocrine Disrupting Chemicals (EDCs)
- RDX (Cyclotrimethylenetrinitramine)
- Tetrachloroethylene
- Methyl tertiary butyl ether (MTBE)
- Nanoparticles
- Polybrominated diphenyl ethers (PBDE)
- Trichloroethylene
- Tungsten
- Atrazine
- Bisphenol A



Massachusetts Interagency Committee on Nanotechnology

Formed April 2007

- ❑ Department of Environmental Protection (MassDEP)
- ❑ Department of Public Health (DPH)
- ❑ Division of Occupational Safety (DOS)
- ❑ Office of Business Development (MOBD)
- ❑ Office of Technical Assistance (OTA)
- ❑ Toxic Use Reduction Institute (TURI)



Interagency Committee

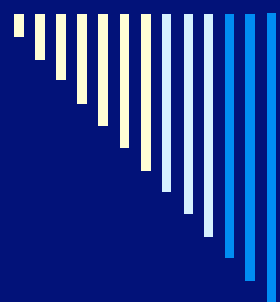
- Mission
- Goals
- Guiding principles
- Duties

<http://www.mass.gov/dep/toxics/stypes/mic.htm>



Interagency Committee Goals

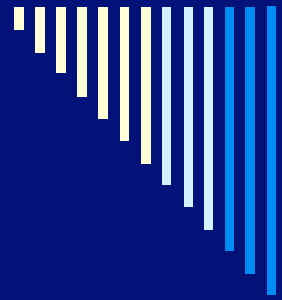
- Start *dialog* with industries, consumer representatives, other government agencies, academia, and environmentalists to characterize MA nano sector
- Obtain better *understanding* of nano manufacturing, product use and disposal and potential hazards and roadblocks to safe development, to work with sector to prevent unintended consequences
- *Education*, internal and external



First Workshop

- The Big Picture: Safe Development of Nanotechnology
- November 15, 2007
- Also sponsored by Environmental Business Council of New England

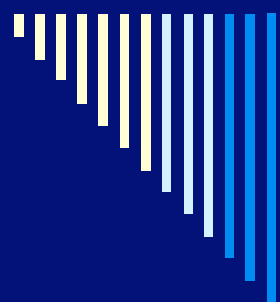
<http://www.mass.gov/dep/toxics/stypes/safenano.pdf>



First Workshop Recommended

Next Steps

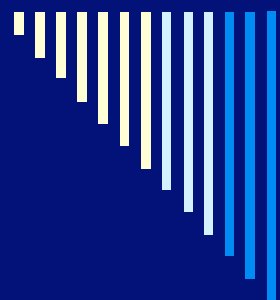
- ❑ Continue to work together
- ❑ Hold meetings, workshops or seminars on selected topics, designed to include input from industry
- ❑ Continue with outreach to business and the public
- ❑ Involve environmental experts and advocates in the public dialogue
- ❑ Develop government clearinghouse for information sharing



Clearinghouse

- January 2008: Safe and Green Nano list serve hosted by UMass Amherst InterNano

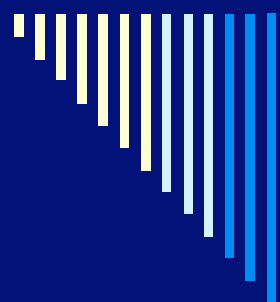
<http://www.internano.org/mailman/listinfo/safe-and-green-nano>



External Advisory Group

Formed September 2008

- Universities
- Environmental groups
- Business groups
- Consultants



Second Workshop

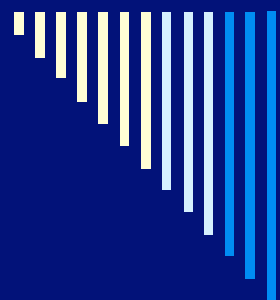
- Promoting the Safe Development of Nanotechnology in Massachusetts
- January 29, 2009

<http://www.mass.gov/dep/toxics/stypes/nanoproced.pdf>



Second Workshop topics

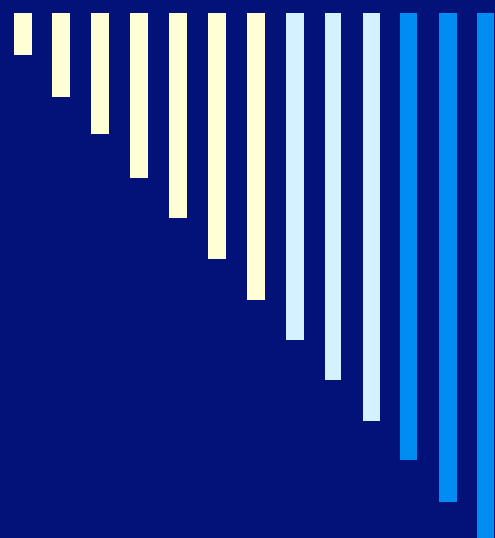
- Interim Best Management Practices (BMPs) & Good Current Practices (GCPs) (particularly in lab and manufacturing settings)
- NIOSH assessment techniques (particularly measurement)
- Breakout sessions on 4 topics:
 - Paint with silver nanoparticles
 - Groundwater remediation with zero valent iron nanoparticles
 - Sunscreen with titanium oxide and zinc oxide nanoparticles
 - Carbon nanotubes in a research setting



Issue-Specific Meetings

- Disposal of Nano material Wastes
- April 7, 2009

- Remediation with Nanoparticles
- Planned for Fall 2009



For more information
on MassDEP's
Nanotechnology work:

<http://www.mass.gov/dep/toxics/sourcest.htm#ec>

or

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